CAN/ULC 60839-11-2:2022

ALARM AND ELECTRONIC SECURITY SYSTEMS – PART 11-2: ELECTRONIC ACCESS CONTROL SYSTEMS – APPLICATION GUIDELINES (IEC 60839-11-2:2014, MOD)

International Electrotechnical Commission

© IEC 2014. © ULC Standards 2022. All rights reserved. Unauthorized reproduction is strictly prohibited.

UL COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM UL INC.

Underwriters Laboratories of Canada (ULC) was established in 1920 by letters patent issued by the Canadian Government. It maintains and operates laboratories and certification services for the examination, testing and certification of appliances, equipment, materials, constructions and systems to determine their relation to life, fire and property hazards as well as providing inspection services.

ULC Standards develops and publishes standards and other related publications for building construction, security and burglar protection, environmental safety, electrical equipment, fire protection equipment, gas and oil equipment, thermal insulation products, materials and systems, energy use in the built environment and electrical utility safety.

ULC Standards is a not-for-profit organization and is accredited by the Standards Council of Canada as a Standards Development Organization.

National Standards of Canada developed by ULC Standards conform to the criteria and procedures established by the Standards Council of Canada. Such standards are prepared using the consensus principle by individuals who provide a balanced representation of interests relevant to the subject area on a national basis.

National Standard of Canada

A National Standard of Canada is a standard developed by a Standards Council of Canada (SCC) accredited Standards Development Organization, in compliance with requirements and guidance set out by SCC. More information on National Standards of Canada can be found at www.scc.ca.

SCC is a Crown corporation within the portfolio of Innovation, Science and Economic Development (ISED) Canada. With the goal of enhancing Canada's economic competitiveness and social well-being, SCC leads and facilitates the development and use of national and international standards. SCC also coordinates Canadian participation in standards development, and identifies strategies to advance Canadian standardization efforts.

Accreditation services are provided by SCC to various customers, including product certifiers, testing laboratories, and standards development organizations. A list of SCC programs and accredited bodies is publicly available at www.scc.ca.

For further information on ULC standards, please contact:

ULC STANDARDS
Telephone: (613) 755-2729
E-mail: ULCStandards@ul.com

To purchase ULC Standards, visit: canada.ul.com/ulcstandards/

The intended primary application of this standard is stated in its scope. It is important to note that it remains the responsibility of the user of the standard to judge its suitability for this particular application.

Copies of this National Standard of Canada may be ordered from ULC Standards.

CETTE NORME NATIONALE DU CANADA EST DISPONIBLE EN VERSIONS FRANÇAISE ET ANGLAISE

UL COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM UL INC.

Standard for Alarm and electronic security systems – Part 11-2: Electronic access control systems – Application guidelines (IEC 60839-11-2:2014, MOD), CAN/ULC 60839-11-2

First Edition, Dated July 29, 2022

Summary of Topics

The First Edition of the Standard for Alarm and Electronic Security Systems Part 11-2: Electronic Access Control Systems – Application guidelines, CAN/ULC 60839-11-2, dated July 29, 2022, has been issued to reflect the latest SCC approval dates, and to incorporate the proposals dated May 28, 2021 and August 30, 2021.

CAN/ULC 60839-11-2 is an adoption of IEC 60839-11-2 first edition, issued 2014. Please note that the National Difference document incorporates all of Canada's national differences for ULC 60839-11-2.

The requirements are substantially in accordance with Proposal(s) on this subject dated May 28, 2021 and August 30, 2021.

PLEASE NOTE THAT CERTAIN CODES MAY REFER TO A SUPERSEDED VERSION OF THIS STANDARD. IN THOSE INSTANCES, THE RELEVANT VERSIONS ARE AVAILABLE FOR PURCHASE.

UL COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM UL INC.

CAN/ULC 60839-11-2:2022

(IEC 60839-11-2:2014, MOD)

ALARM AND ELECTRONIC SECURITY SYSTEMS – PART 11-2: ELECTRONIC ACCESS CONTROL SYSTEMS – APPLICATION GUIDELINES (IEC 60839-11-2:2014, MOD)

ICS 13.310; 13.320

International Electrotechnical Commission

ULC Standards
Normes ULC

scc ccn

FIRST EDITION . . . . . JULY 29, 2022

ISSN 0317-526X
Copyright © 2022

ULC Standards

All rights reserved. No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without prior permission.

UL COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM UL INC.

CONTENTS

ULC Standards Technical Committee on Security and Burglar Alarm Equipment and Systems 7

PREFACE 11

NATIONAL DIFFERENCES 13

FOREWORD 15

INTRODUCTION 17

1 Scope 19
2 Normative References 19
3 Terms and definitions 19
4 Abbreviations 20
5 System architecture 20
6 Environmental and EMC considerations 21
6.1 General 21
6.2 Environmental Class I – Equipment situated in indoor but restricted to residential/office environment 21
6.3 Environmental Class II – Equipment situated indoor in general 21
6.4 Environmental Class III – Equipment situated outdoor – Sheltered or indoor extreme conditions 22
6.5 Environmental Class IV – Equipment situated outdoor – General 22
6.6 EMC 22
6DV.1 Modification to add the following paragraph to Section 6: 22
6DV.2 Modification by deleting Section 6.6, EMC. 22
7 System planning 22
7.1 General 22
7.1DV Modification by adding the following paragraph to Section 7.1, General: 23
7.2 Risk assessment and security grading 23
Table 1DV Modification by replacing Table 1 with the following: 25
7.3 System design 26
8 System installation 31
8.1 General 31
8.2 Installation planning 32
9 Commissioning and system handover 34
9.1 Commissioning 34
9.2 System handover 35
9DV Modification by adding the following to Section 9: 36
10 System operation and maintenance 36
10.1 System operation 36
10.2 System maintenance 36
10DV Modification by adding the following to Section 10: 37
11 Documentation 37
11.1 General 37
11.2 Documentation for planning 37
11.3 Documentation for commissioning/system handover 38
11.4 Documentation for maintenance 38

Annex A (normative) Allowed exceptions for installed systems

A.1 General 39
A.2 Claims of compliance 39

UL COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM UL INC.

A.3 Allowed exceptions 39

Annex B (informative) Standby battery capacity calculations

Bibliography

UL COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM UL INC.

ULC Standards Technical Committee on Security and Burglar Alarm Equipment and Systems

NAME	AFFILIATION	CATEGORY	REGION
D. Nita (Chair)	Digital Security Controls, Div Of Tyco Safety Products Canada Ltd	Producer	Canada
B. Barnable	Bank of Montreal	User	Canada
L. Chavez	UL LLC	Testing and Standards	USA
D. Currie	Damar Security Systems, DIV of Lmabton Communication Ltd.	User	Canada
L. Dischert	Tyco Integrated Security LLC	User	USA
K. Eltherington	Brink's Canada	User	Canada
E. Flamand	Siemens Canada	Producer	Canada
R. Jagmohan	Honeywell Security & Communications	Producer	Canada
R. Krzak	Chubb Security Systems, DIV of Chubb Security Canada, Inc.	Producer	Canada
F. Leber	AML Encore Corp.	General Interest	Ontario
G. MacPherson	Canadian Security Association	General Interest	Canada
B. Paterson	Office of the Ontario Fire Marshall and Emergency Management	Regulator	Ontario
M. Roper	M. Roper	General Interest	Canada
S. Stroud	ADT Security Services Canada Inc.	Supply Chain	Canada
D. Winikoff	David Winikoff Security Consultants	General Interest	USA
I. Yavari	Onyx Group of Companies	User	Ontario
T. Zhong (Non-voting)	UL LLC	Associate Member	Canada
W.Jayathilake (Non-voting)	ULC Standards	Project Manager	Canada

This list represents the membership at the time the Committee balloted on the final text of this edition. Since that time, changes in the membership may have occurred.

UL COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM UL INC.

ULC STANDARDS SUBCOMMITTEE ON ACCESS CONTROL SYSTEMS

NAME	AFFILIATION	CATEGORY	REGION
D. Nita (Chair)	Digital Security Controls, Div Of Tyco Safety Products Canada Ltd	Producer	Canada
B. Barnable	Bank of Montreal	User	Canada
M. Beatty	Canadian Imperial Bank Of Commerce	User	Canada
T. Bergmann	Consultant	General Interest	Canada
A. Bjork	Final Image Inc.	Producer	Ontario
A. Cavers	UL LLC	General Interest	Canada
L. Conium	Toronto Police Service	Regulator	Ontario
D. Currie	Damar Security Systems, DIV of Lambton Communication Ltd.	User	Canada
E. De Diego	Applied Security Research Associates	General Interest	Canada
F. De Vall	HID Global Corp	Producer	USA
L. Dischert	Tyco Integrated Security LLC	User	USA
G. Dzeryk	ADT Security Services Canada Inc	User	Canada
P.R. Garnham	PG Security Associates	General Interest	Ontario
D. Hollingshead	Canadian Security Association	General Interest	Canada
R. Jagmohan	Honeywell Security & Communications	Producer	Canada
R. Krzak	Chubb Security Systems, DIV of Chubb Security Canada, Inc.	Producer	Canada
W. Lahoud	Goldmark Security Consulting Inc	General Interest	Canada
F. Leber	AML Encore Corp.	General Interest	Canada
S. Li	Alarm Max Security Inc.	User	Ontario
G. MacPherson	Canadian Security Association	General Interest	Canada
A. Morissey	Security Equipment Ret	Producer	Canada
B. Paterson	Office Of The Fire Marshal & Emergency Management	Regulator	Ontario
J. Peck	City Of Toronto	Regulator	Ontario
J. Reske	Honeywell	Producer	Canada
B. Riddel	Cadillac Fairview Corp Ltd	User	Canada
M. Roper	M Roper	General Interest	Canada
C. Sauve	Department Of National Defence & Canadian Forces	Regulator	Canada
V. Scarpelli	ADT Security Services Canada Inc.	User	Canada
T. Shelton	Digital Monitoring Products Inc.	Producer	USA
S. Stroud	ADT Security Services Canada Inc.	Supply Chain	Canada
G. Watson	Visual Defence Inc.	Producer	Ontario
D. Winikoff	David Winikoff Security Consultants	General Interest	USA
I. Yavari	Onyx Group of Companies	User	Canada
A. Young	Minelec Ltd	Producer	Ontario
T. Zhong	UL LLC	Associate Member	Canada
L. Chavez	UL LLC	Associate Member	USA
W. Jayathilake	ULC Standards	Project Manager	Canada

UL COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM UL INC.

PREFACE

This is the First Edition of CAN/ULC 60839-11-2, Alarm and Electronic Security Systems, Part 11-2: Application Guidelines, which is an adoption, with Canadian deviations, of the international standard by International Electrotechnical Commission, IEC 60839-11-2:2014.

This Edition of the Standard has been formally approved by the ULC Committee on Security and Burglar Alarm Equipment and Systems.

This Standard has been developed in compliance with the requirements of Standards Council of Canada (SCC) for accreditation of a Standards Development Organization.

Only metric SI units of measurement are used in this Standard. If a value for measurement is followed by a value in other units in parentheses, the second value may be approximate. The first stated value is the requirement.

In Canada, there are two official languages, English and French. All safety warnings must be in French and English. Attention is drawn to the possibility that some Canadian authorities may require additional markings and/or installation instructions to be in both official languages.

Attention is drawn to the possibility that some of the elements of this Canadian standard may be the subject of patent rights. ULC Standards shall not be held responsible for identifying any or all such patent rights.

Requests for interpretation of this Standard should be sent to ULC Standards. The requests should be worded in such a manner as to permit a “yes” or “no” answer based on the literal text of the requirement concerned.

This CAN/ULC 60839-11-2 Standard is under continuous maintenance, whereby each revision is approved in compliance with the requirements of SCC for accreditation of a Standards Development Organization. In the event that no revisions are issued for a period of four years from the date of publication, action to revise, reaffirm, or withdraw the standard shall be initiated.

Comments or proposals for revisions on any part of the Standard may be submitted at any time. Proposals should be submitted via a Proposal Request in the On-Line Collaborative Standards Development System (CSDS) at https://csds.ul.com/canada.

This Standard is intended to be used for conformity assessment.

July 2022

©All rights reserved. No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without prior permission. IEC material is reprinted with permission. Inquiries regarding this National Adoption of Canada should be addressed to ULC Standards.

UL COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM UL INC.

NATIONAL DIFFERENCES

National Differences from the text of International Electrotechnical Commission (IEC) Publication 60839-11-2, Alarm and Electronic Security Systems Part 11-2: Electronic access control systems – Application guidelines, copyright 2014, are indicated by notations (differences) and are presented in bold text.

There are five types of National Differences as noted below. The difference type is noted on the first line of the National Difference in the standard. The standard may not include all types of these National Differences.

DR – These are National Differences based on the **national regulatory requirements**.

D1 – These are National Differences which are based on **basic safety principles and requirements**, elimination of which would compromise safety for consumers and users of products.

D2 – These are National Differences from IEC requirements based on existing **safety practices**. These requirements reflect national safety practices, where empirical substantiation (for the IEC or national requirement) is not available or the text has not been included in the IEC standard.

DC – These are National Differences based on the **component standards** and will not be deleted until a particular component standard is harmonized with the IEC component standard.

DE – These are National Differences based on **editorial comments or corrections**.

Each national difference contains a description of what the national difference entails. Typically one of the following words is used to explain how the text of the national difference is to be applied to the base IEC text:

Addition / Add - An addition entails adding a complete new numbered clause, subclause, table, figure, or annex. Addition is not meant to include adding select words to the base IEC text.

Modification / Modify - A modification is an altering of the existing base IEC text such as the addition, replacement or deletion of certain words or the replacement of an entire clause, subclause, table, figure, or annex of the base IEC text.

Deletion / Delete - A deletion entails complete deletion of an entire numbered clause, subclause, table, figure, or annex without any replacement text.

UL COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM UL INC.

FOREWORD

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ALARM AND ELECTRONIC SECURITY SYSTEMS – Part 11-2: Electronic access control systems – Application guidelines

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.

2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.

3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.

4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.

5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.

6) All users should ensure that they have the latest edition of this publication.

7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.

8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60839-11-2 has been prepared by IEC technical committee 79: Alarm and electronic security systems.

The text of this standard is based on the following documents:

FDIS	Report on voting
79/476/FDIS	79/489/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

UL COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM UL INC.

A list of all parts in the IEC 60839 series, published under the general title *Alarm and electronic security systems*, can be found on the IEC website.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

• reconfirmed,

• withdrawn,

• replaced by a revised edition, or

• amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

DV.1 DE ***Modification to add the following to the IEC Foreword:***

The numbering system in the standard uses a space instead of a comma to indicate thousands and uses a comma instead of a period to indicate a decimal point. For example, 1 000 means 1,000 and 1,01 means 1.01.

UL COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM UL INC.

INTRODUCTION

This standard is part of the IEC 60839 series, written to include the following parts:

Part 11-1: Electronic access control systems – System and components requirements

Part 11-2: Electronic access control systems – Application guidelines

This part of IEC 60839 describes the general requirements for planning, installation, operation, maintenance and documentation for the application of electronic access control systems (EACS).

The performance of the EACS is determined by the security grades allocated to the access points. A risk assessment that identifies the risks and perceived threats should first be carried out in order to establish the appropriate security grades.

Four security grades are available based upon the knowledge and tools available to a person intent upon gaining unauthorised access and the type of application, taking into account specific organizational aspects and the value of the assets.

Separate guidance is provided for each activity along with recommendations for the documentation needed. A brief description of each section covering the activities is provided below:

System planning: this section is intended to assist the designer with the selection of an electronic access control system (EACS) that provides the control of access and security integrity commensurate with the value of the assets requiring protection and the associated risks. See Clause 7.

System design should minimise potential vulnerabilities that could be exploited to circumvent the access control measures. It is recommended that safeguards are incorporated to give early warning of attempts to circumvent the access control measures. See 7.3.

System installation: this section is intended to help those responsible for installing the EACS by identifying issues which should be considered prior to commencing the installation and during the installation of the system in order to ensure the EACS is correctly implemented as specified during system planning. See Clause 8.

Commissioning and system handover: this section provides guidance to ensure the level of performance required in the system planning is obtained and that the end user is provided with the necessary documentation, records and operating instructions during the handover of the EACS. See Clause 9.

System operation and maintenance: includes information regarding the responsibilities of the end user of the EACS to ensure the system is operated correctly and adequately maintained. It covers inspection, service and the use of remote diagnostics in order that the level of performance determined during the system planning stages can be maintained. See Clause 10.

UL COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM UL INC.

ALARM AND ELECTRONIC SECURITY SYSTEMS – Part 11-2: Electronic access control systems – Application guidelines

1 Scope

This part of IEC 60839 defines the minimum requirements and guidance for the installation and operation of electronic access control systems (EACS) and/or accessory equipment to meet different levels of protection.

This standard includes requirements for planning, installation, commissioning, maintenance and documentation for the application of EACS installed in and around buildings and areas. The equipment functions are defined in the IEC 60839-11-1.

When the EACS includes functions relating to hold-up or the detection of intruders, the requirements in standards relating to intrusion and hold-up are also applicable.

This standard provides application guidelines intended to assist those responsible for establishing an EACS to ascertain the appropriate design and planning of the EACS, both in terms of levels of protection and levels of performance necessary to provide the degree of access control and protection considered appropriate for each installation. This is achieved by scaling or classifying the features of electronic access control systems related to the security functionality (e.g. recognition, access point actuation, access point monitoring, duress signaling and system self-protection) in line with the known or perceived threat conditions.

This standard does not cover the methods and procedures for conducting a risk assessment.

2 Normative References

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60839-11-1:2013, *Alarm and electronic security systems – Part 11-1: Electronic access control systems – System and components requirements*

3 Terms and definitions

For the purposes of this document the terms and definitions given in IEC 60839-11-1, as well as the following, apply.

3.1
area zone
part of a protected area which has its own set of access levels

Note 1 to entry: It may have a different security grade than other area zones within the same protected area.

3.2
competent organization
organization possessing sufficient resources and staff with adequate expertise and training in the maintenance of EACS

UL COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM UL INC.

3.3
fail-safe
fail-open
locking device designed to automatically release upon power failure

3.4
fail-secure
fail-locked
locking device designed to remain secure upon power failure

3.5
protected area
controlled area
area defined by a physical boundary, through which passage is controlled by means of one or more access points/portals

Note 1 to entry: It may contain several separate area zones with the same or different security grades. Refer to the area zone definition in 3.1.

3.6
system owner
person or group of people that make the decision about what is appropriate for the respective premises to be used in order to get the desired access control/protection/price/etc.

4 Abbreviations

For the purposes of this document, the abbreviations given in IEC 60839-11-1, as well as the following apply.

ACU Access control unit

EACS Electronic access control system

EMC Electromagnetic compatibility

REX Request to exit

5 System architecture

An access control system comprises all the constructional and organizational facilities together with equipment required for controlling access. Refer to Figure 1 for an example of a typical arrangement of components and interfaces of an EACS.

The physical protection and mechanical strength of actuators, sensors, etc., should be commensurate for the security grade of each access point. Consideration should be given to the physical strength of the surrounding building (e.g. walls, door construction, etc).

UL COPYRIGHTED MATERIAL – NOT AUTHORIZED FOR FURTHER REPRODUCTION OR DISTRIBUTION WITHOUT PERMISSION FROM UL INC.